## REMARKS

Claims 1-23 are all the claims pending in the application. Claims 21-23 have been added to further define the invention. Reconsideration and allowance of all the claims are respectfully requested in view of the following remarks.

**Election of Species**

Applicants assert that claim 5 is readable on the elected species of Fig. 37. The Examiner is mistaken in indicating that claim 5 should be withdrawn from consideration because it refers to the PTC thermistor of the non-elected species corresponding to Fig. 48. Although Fig. 48 may also have a PTC thermistor, such does not prevent another species from also having such a component. Again, as noted in the Amendment filed August 9, 2004, a PTC thermistor is discussed in connection with Fig. 37. Specifically, the specification discusses the variations in thermistor (NTC, PTC, CTR, silicon-based, etc) with specific reference to Fig. 37. See page 102, line 10 - page 103, line 1. Thus, the elected species of Fig. 37 also may include PTC and silicon thermistors, as set forth in claim 5.

Alternatively, the Examiner rejected claim 5 under §112. Applicants respectfully traverse this rejection because claim 5 is appropriate as written.

The Examiner's position appears to be that claim 1 sets forth a temperature sensor configured to decrease an output voltage in conjunction with an increase of measured temperature, whereas claim 5 appears to remove such an element by setting forth a PTC thermistor, i.e., one in which the output voltage increases with an increase in temperature. However, the Examiner is mistaken. Specifically, claim 1 sets forth a "sensor" that is configured to decrease an output voltage in conjunction with an increase of measured temperature. On the other hand, claim 5 sets forth that a "thermistor" has a PTC. But the thermistor is only one component of the sensor. By way of non-limiting example, as shown in Fig. 37, the temperature sensor 411 includes an NTC thermistor 414 and a resistor 415. However, one of ordinary skill in the art would readily recognize that the NTC thermistor 414 could be replaced by a PTC thermistor and other components such as an inverter or subtractor, whereby the sensor 411 would

still be configured to decrease an output voltage in conjunction with an increase of measured temperature.

Thus, because the "thermistor" is only one component of the "sensor" and the specification specifically discloses that a PTC may be used in the Fig. 37 configuration, claim 5 is not properly rejected under §112, and is readable on the elected species of Fig. 37.

**New Claims**

Claims 21-23 have been added to further define the invention. New claims 21-23 read on the elected species of Fig. 37 as follows. The output of the temperature sensor as set forth in claims 21-23 is described in the specification in connection with elected Fig. 37 on page 93. Accordingly, Applicants respectfully request that new claims 21-23 be examined along with the claims readable on elected Fig. 37. Additionally, claims 21-23 depend either from claim 1 or from claim 2 and, therefore, are allowable at least by virtue of their dependency.

**Claim Rejections - 35 U.S.C. § 102**

The Examiner rejected claims 1-4, 6-9, 11-14, and 16-19, under §102(e) as being anticipated by US Patent 6,609,419 to Bankart et al. (hereinafter Bankart). Applicants respectfully traverse this rejection because Bankart fails to disclose every element as set forth and arranged in the claims.

An embodiment of the present invention consistent with that set forth in claim 1 relates to a temperature sensor that detects an abnormality of a bearing, wherein: (1) the sensor is configured to decrease an output voltage in conjunction with an increase of measured temperature; and (2) an output voltage characteristic of the temperature sensor is linearized within a temperature range of from 0 °C to 200 °C.

In the prior art, a temperature sensor is configured to decrease a resistance value in accordance with a logarithmic function. Thus, the linearity of the output voltage characteristic of the temperature sensor is not good. Accordingly, the sensor's detecting precision becomes worse at the point where the abnormality of the bearing is generally detected.

To solve the above-noted problem, in one embodiment of the present invention, when the abnormality of the bearing is detected, the detecting precision is increased by linearizing the output characteristic of the temperature sensor within the temperature range of from 0 °C to 200 °C.

Further, when the abnormality of the bearing is detected, the sensor is configured to decrease an output voltage in conjunction with an increase of measured temperature. When the power voltage is decreased due to a failure of a power unit, the sensor detects this situation as "an increase in the measured temperature". Thus, a fail safe can be performed by this operation. In addition, when a wire in the temperature sensor breaks, a detection of the broken wire can be performed, because a voltage value is different from a normal one.

The Examiner's reliance on Bankart is mistaken because Bankart does not teach or suggest the above-noted elements (1) and (2) for a temperature sensor that detects abnormality in a bearing.

First, Bankart relates to a system for detecting pressure of tire; the sensor does not detect an abnormality in a bearing.

Second, Bankart fails to disclose the above-noted elements (1) and (2).

The temperature sensor does not operate independently, but instead its output is combined with a sensor for detecting a pressure of the tire. See, for example, column 5 lines 14 - 25, column 5 line 47 - column 6 line 55, and column 34, lines 34-52. The temperature sensor's output is combined with the pressure sensor's output to calibrate a change of the pressure of the tire in conjunction with a change of the temperature.

For example, when a static capacity of the pressure sensor is $C_p = k_p \bullet P^{\Phi}$ (equation 5), a weather temperature characteristic of the temperature sensor become $R_t = k_t \bullet T^{-\Phi}$ (equation 6, wherein $\Phi$ is a common parameter). Accordingly, Bankart discloses how the temperature sensor is combined with the pressure sensor in the system and how to use the sensors in the system, when the sensors are used together. Bankart does not teach or suggest that an abnormality detection of the bearing is performed by independently using the temperature sensor. Further,

Bankart does not disclose how the characteristic of the temperature sensor is set in a case that the temperature sensor is independently used.

Moreover, the output of the sensor in Bankart is a sinusoidal waveform, as shown in Fig. 12 B. Although the thermistor T101 may have a negative temperature coefficient, the sensor 1 as a whole outputs a sinusoidal waveform. See, for example: col. 5, lines 14-25 (sensor module 1); col. 13, lines 8-19 (sensor module 1 includes resonator 52, rectifier 54, voltage control portion 56, and sensor oscillator 58); col. 15, lines 23-25; col. 21, lines 44-53; col. 22, lines 9-11; col. 25, lines 35-39; and col. 34, lines 34-52. Accordingly, Bankart's sensor module 1 is not "configured to decrease an output voltage in conjunction with an increase of measured temperature". Also, because the output of Bankart's sensor is sinusoidal, it is not linearized as claimed.

For at least any of the above reasons, Bankart fails to anticipate independent claim 1. Likewise, this reference fails to anticipate dependent claims 6-9.

Independent claim 2 sets forth a sensor configured to decrease an output voltage in conjunction with an increase of measured temperature, wherein the sensor is a temperature sensor which detects an abnormality of a bearing. These elements are similar to those set forth in claim 1 and, therefore, are distinguishable from Bankart for reasons similar to those set forth above in connection with the similar elements of claim 1. Accordingly, for at least these reasons, Bankart fails to anticipate independent claim 2. Likewise, this reference fails to anticipate dependent claims 3, 4, 11-14, and 16-19.

**Claim Rejections - 35 U.S.C. § 103**

The Examiner rejected claims 10, 15, and 20, under §103(a) as being unpatentable over Bankart in view of official notice of common knowledge in the art, or, in the alternative, engineering design choice. Applicants respectfully traverse this rejection because Bankart fails to teach or suggest all of the elements as set forth and arranged in the claims.

As noted above, Bankart is deficient. The Examiner asserts that it would have been obvious to provide Bankart with rotation and vibration sensors. Even assuming, for the sake of argument alone, that one of ordinary skill in the art were motivated to provide Bankart with

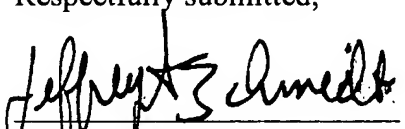
rotation and vibration sensors, any such modification of Bankart would still not cure the above-noted deficiencies. Accordingly, Bankart fails to render obvious Applicants' claims 10, 15, and 20.

**Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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